

Summary of CS Graduate Program Requirements

Jan Prins

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Types of Requirements

- The MS and PhD program have the following categories of requirements
 1. Background
 2. Course requirements (breadth and credit hour)
 3. Program product
 4. Comprehensive exam
 5. Technical writing
 6. Residence credit and time limits
- PhD program has additional requirements
 - Proposal, primary concentration, PhD oral exam, PhD Dissertation and defense
- This overview is concerned with categories 1 – 6.
 - Special note of recent changes

(1) Background requirement

- **Background requirements for the MS and PhD are identical**
 - **Computer Science**
 - COMP 411 Computer Organization
 - COMP 410 Data Structures
 - COMP 550 Algorithms and Analysis
 - Any two of the following
 - COMP 521 Files and Databases
 - COMP 520 Compilers
 - COMP 530 Operating Systems
 - COMP 524 Programming Language Concepts
 - COMP 541 Digital Logic and Computer Design
 - COMP 455 Models of Languages and Computation
 - **Mathematics and Statistics**
 - MATH 233 Calculus of Functions of Several Variables
 - MATH 381 Discrete Mathematics
 - MATH 547 Linear Algebra
 - MATH 661 Numerical Analysis (Scientific Computing I)
 - STOR 435 Probability
- **Satisfied by**
 - Previous course work (undergrad or grad)
 - Completion of the course as part of your graduate program
 - Completion of a more advanced course in your graduate program that includes, or is based, on the material
 - Independent study (with or without credit)
- **Documented in consultation with your academic adviser**
 - File form CS-01

(2) MS Breadth requirement

- **Course categories**
 1. Theory and formal thinking
 2. Systems and Hardware
 3. Applications
- **MS requirement**
 - One course in each of categories 1-3
 - At most one course at 500 level or COMP 455 (COMP 550 cannot be used)
 - All courses must have been taken as a graduate student
 - BS/MS may count courses not used in BS
 - Previous grad study elsewhere may be used with course waiver and approval of GSC
 - Grade requirement within breadth courses
 - Average grade at least P
 - Minimum grade no lower than P-

(2) Ph. D. Breadth requirement

- **Course categories**
 1. Theory and formal thinking
 2. Systems and Hardware
 3. Applications
 4. Outside of CS (supporting dissertation)
- **Ph.D. requirement**
 - Six courses total
 - At least one course in each of categories 1-3 at 600 level or above
 - (*) At most one course at 500 level or COMP 455 (COMP 550 cannot be used)
 - (*) No more than 2 courses per category
 - Courses outside of CS must support research area or CS in general
 - All courses must have been taken as a graduate student
 - Previous grad study elsewhere may be used with a course waiver and approval of GSC
 - Grade requirement (within breadth courses)
 - Average grade \geq midpoint between P+ and H- (*Calingaert Score* at least 0)
 - Minimum grade no lower than P-

(*) rules may be relaxed by petition to GSC

(2) Credit Hour requirement

- MS requirement: 30 credit hours
 - Minimum 18 hours CS courses
 - COMP 400 – COMP 890 (excludes COMP 990 – 993 and COMP 892)
 - Breadth courses
 - Background COMP courses
 - Elective COMP courses
 - Maximum 12 hours of other courses
 - Courses external to the department
 - All MS programs must include at least one COMP 992 or 993 registration
 - COMP 991 independent study (research topics)
 - COMP 992 comprehensive paper
 - COMP 993 MS Thesis (up to 6 hours)
 - Note: COMP 992 or 993 confer full-time status
 - Transfer credit
 - Up to 6 hours from previous graduate work with GSC approval
- Ph.D. requirement: no credit hour requirement

(3) Program Product requirement

- Identical requirement for MS and PhD
- Program Product Definition
 - A program product is a piece of software that is developed for the use of people other than the developer that is expected to be used and maintained by other developers after the initial developer is no longer working on it
- May be satisfied by any of the following (file form CS-13 to document completion)
 - **Course work:** COMP 523 (Software Engineering) at UNC or equivalent course elsewhere
 - For external course get a course waiver from a Software Engineering faculty member
 - **Industry Experience:** student has spent at least 3 months in a software development job in an organization with an established development process and participated substantively in the development of a program product.
 - Approved by advisor
 - **Alternative:** student has developed a program product, as defined above, and has met the expectations of the client, including product delivery and documentation for both users and other developers.
 - Requires approval by client and advisor (or second faculty member if client = advisor)

(4) MS Comprehensive Exam

- Three options
 1. Comprehensive paper (COMP 991/992)
 - Comprehensive survey and/or synthesis of a substantial body of work
 - Directed by a faculty adviser and reviewed by a second faculty member
 - Expected to be publication quality in substance and presentation
 2. Comprehensive oral exam
 - Topical exam, covering courses listed in the student's MS program of study
 - Administered by a committee of 3 or more faculty members
 3. MS Thesis (COMP 993)
 - Document based on research or on the solution of a substantial problem
 - Directed by a faculty adviser and evaluated by a thesis committee including at least 2 additional faculty members
 - Oral presentation of work with examination by the committee
 - Must meet standards of form and writing set by the graduate school
- Options 1 and 2 are terminal exams for the MS
 - A PRP or MS Thesis is needed for admission to the PhD program

(4) PhD Comprehensive Exam

- Two options

1. PRP: Preliminary research presentation (COMP 991 or COMP 992)

- Demonstrate ability to conduct independent research and effectively communicate results
- Publication quality document describing research and related work
- Directed by a faculty adviser and examined by a separately appointed exam committee
- Public presentation and exam

2. Waiver of the Exam

- Major contributor to a publication submitted to a well known, refereed, venue
- Public presentation of the work in the department
- Waiver determined by faculty vote

– Use form CS-09 to register

- Typically attempted in 3rd or 4th semester

- May be attempted twice
- Failure to pass this exam by the 4th semester constitutes unsatisfactory progress and loss of guaranteed support.

(5) Technical Writing

- MS: Writing requirement has three options:
 1. Comprehensive exam paper or PRP (via COMP 992)
 - Provided paper has passed review
 2. MS Thesis (via COMP 993)
 3. Outside review option
 - Principal author of a technical document of at least 5000 words
 - Reviewed for style and content by at least two readers
 - Typically: published refereed article or previous MS/PhD dissertation
 - Approved by GSC
 - File form CS-08 to document completion
 - Attachments include the paper and referee reports
 - GSC may require confirmation of “principal author” status
- PhD: No writing requirement beyond dissertation, but there is a technical communication course requirement
 - COMP 915 Technical Communication in CS (1 cr. hr.) or course waiver

(6) Residence Credit and Time Limits

- Residence credit for a semester is earned at a rate determined by credit hours completed on campus
- **Almost always achieved automatically**
 - MS requirement
 - 2 semesters credit
 - PhD requirement
 - 4 semesters credit total
 - At least two semesters with ≥ 6 hours registration
- **Time Limits**
 - MS: 5 years
 - PhD: 8 years

On-campus Credit hours	Residence credit
≥ 9	1
≥ 6	$\frac{3}{4}$
≥ 3	$\frac{1}{2}$
> 0	$\frac{1}{4}$

Putting it together: Program of study

- Documents how you satisfied or intend to satisfy the requirements
 - Courses taken
 - Background requirement
 - Breadth requirement
 - Other requirements
 - Program product
 - Writing requirement
 - Teaching requirement
- Submit program of study in preliminary form and final form
 - MS (CS-03)
 - Preliminary at end of 2nd semester
 - Final in middle of 4th semester
 - PhD (CS-06)
 - Preliminary at end of 4th semester
 - Final at end of 6th semester